Wetlands Permitting & Stream Crossings

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DES Wetlands Bureau
LRM Workshop 2006

Introduction

- Overview of wetlands permitting
  - Resource, law & rules, permit applications
  - Quick updates
  - Avoidance, minimization, mitigation
- Stream crossings
  - Specific concerns & issues
  - Options

Why Are Wetlands Important?

- Commerce, recreation and aesthetic enjoyment
- Adequate groundwater levels
- Ability to handle the runoff of waters
- Natural ability of wetlands to absorb flood waters and silt
- Habitats and reproduction areas for plants, fish and wildlife
- Sources of nutrients for finfish, crustacea, shellfish and wildlife
- Interests of the general public

RSA 482-A Jurisdiction

- Wetlands (tidal and nontidal)
- Surface waters and their banks
- Sand dunes
- Upland tidal buffer zone
- Uplands adjacent to prime wetlands

Administrative Rules: Wt 100 – 800
Note: Wt to become Env-Wt

Municipalities with Prime Wetlands

- Andover
- Barrington
- Bow
- Brookline
- Derry
- Enfield
- Exeter
- Fremont
- Gilford
- Goffstown*
- Holderness
- Hooksett
- Meredith
- Nashua
- Northwood
- New London
- Pelham
- Salem
- Sanbornton
- Sandwich
- Tamworth
- Weare
- Wolfeboro

* Under review at DES

Wetlands

Swamp/ forested wetland

Wet meadow

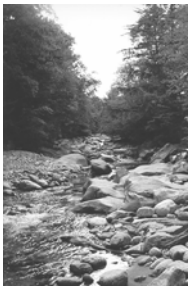
Tidal wetland

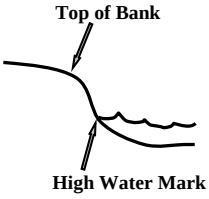
Bog

Scrub-shrub wetland

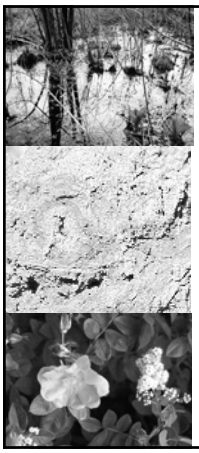
Marsh

Lakes, Streams, Rivers & Banks





Wetland Delineation

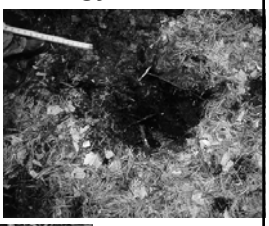


"under normal circumstances"

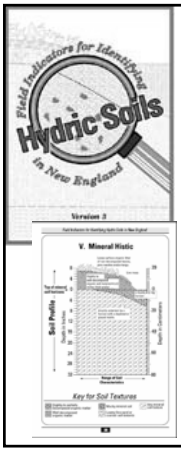
- Water at or near the surface
- Hydric soils
- Prevalence of wetland vegetation

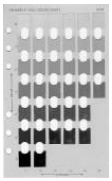
1987 Corps of Engineers manual
2004 v3 Field Indicators for Identifying Hydric Soils
1988 USFWS Plant List

Wetland Hydrology



Hydric Soils





Wetland Vegetation (Hydrophytes)

- *National List of Plant Species That Occur in Wetlands: Northeast Region* (1988)
- Wetland-indicator status indicates the species frequency of occurrence in wetlands.

What Activities Are Regulated In Jurisdiction?

- Dredge
- Fill
- Construction

Permit Applications and Notifications

Through Municipal Clerk

- Standard Dredge & Fill
- Minimum Impact Expedited
- Minimum Impact Agriculture
- Permit By Notification

Directly to DES

- Notification of Routine Roadway & Railway Maintenance Activities
- Notification of Minimum Impact Forestry
- Notification of Minimum Impact Trails
- Seasonal Dock Notification for Lakes & Ponds
- Recreational Mineral Dredging

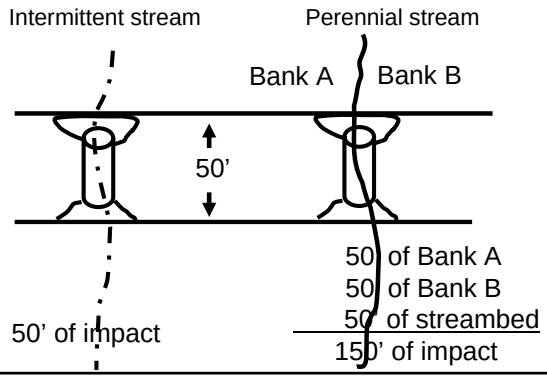
Generalized Project Classification Scheme

	Minimum	Minor	Major
Area (sq. ft.)	**< 3,000**	**3,000 – 20,000**	**> 20,000**
Bank Length	**< 50 linear ft**	**50 – <200 lf**	**≥200 lf**
Natural Heritage Bureau			**Thr. & Endang. species; Exemplary natural comm.**
Type of Work	**Repair in-kind, seasonal dock**	**Permanent dock; work in the water**	
Protected Resource	**Repair in-kind for all but prime wetlands**		**Tidal wetlands, TBZ, prime wetlands and adjacent upland, bog, marsh**

Applicants Must Address:

- Need for the project's impact (Wt 302.01)
- Avoidance and minimization (Wt 302.03)
- Address Wt 302.04 (environmental impacts)
  - Least impacting alternative

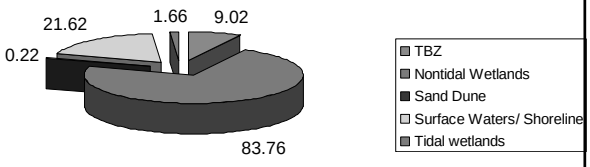
Measuring Impacts To A Stream



Stream Crossings

- Increased development
- Culvert failures/flooding
- Habitat degradation
- Rare, threatened and endangered fish and wildlife associated with streams
- Movement of biota and other watershed products (such as woody debris, sediment)

Impacts By Resource (acres)
SFY 2005



33 acres for access-related projects – wetlands & surface waters

Effects of Roads on Aquatic Resources

- Accelerated erosion and subsequent sediment loading.
- Impacts to aquatic habitats of fish and aquatic insects.
- Changes in stream channel slope and function.
- Alteration of runoff characteristics of watersheds, such as duration and timing.

Evaluation of Impacts (Wt 302.04)

- Impact on plants, fish, and wildlife, including:
  - Rare, special concern species;
  - Threatened and endangered species
  - Species at the extremities of their ranges;
  - Migratory fish and wildlife;
  - Exemplary natural communities.
- Impact of the project on quantity or quality of surface and ground water.

NHPGP issued by US Army Corps of Engineers

- Eliminates the need to apply for separate approval from the Corps for most work authorized by DES.
- After DES issues a wetlands permit:
  - Minimum project: Work may start.
  - Minor project: Maximum 30-day waiting period before work may start.
  - Major project: Must obtain written authorization from Corps before work may start.

NH Programmatic General Permit

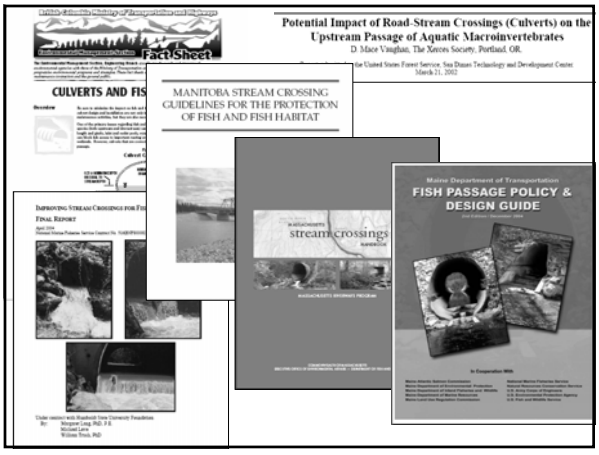
19. Waterway/Wetland Crossings.

(a) All temporary and permanent crossings of waterbodies and wetlands shall be suitably culverted, bridged, or otherwise designed to withstand and to prevent the restriction of high flows, to maintain existing low flows, and so as not to obstruct the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.

(b) No open trench excavation in flowing waters shall be allowed unless the activity is screened pursuant to the Minor Impact Project procedures and conditioned to protect the aquatic environment.

(c) Temporary bridges, culverts, or cofferdams shall be used for equipment access across streams (note: areas of fill and/or cofferdams must be included in total waterway/wetlands impacts to determine applicability of this general permit).

(d) For projects that meet the definition of a Minimum Impact Project, unconfined in-stream construction work shall be conducted during the low flow period of July 15 - October 1 in any year. Projects that are conducted outside of that time period do not qualify for Minimum Impact Project procedures under this PGP and shall be screened pursuant to Minor Impact Project procedures, regardless of the waterway and wetland fill and/or impact area.

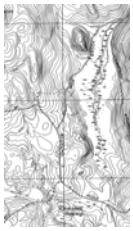


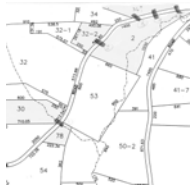
Considerations for Projects

- Existing vs. new crossing
- Documentation of problems
  - Scouring
  - Aggrading
  - Flooding
  - Fragmentation of habitat

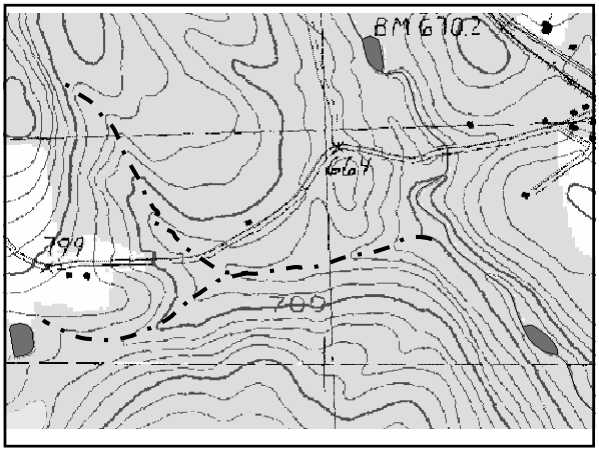
Information for Applications

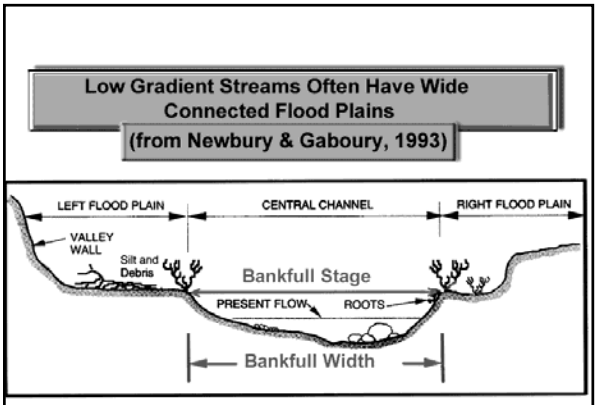
- Map/topo
- Photos



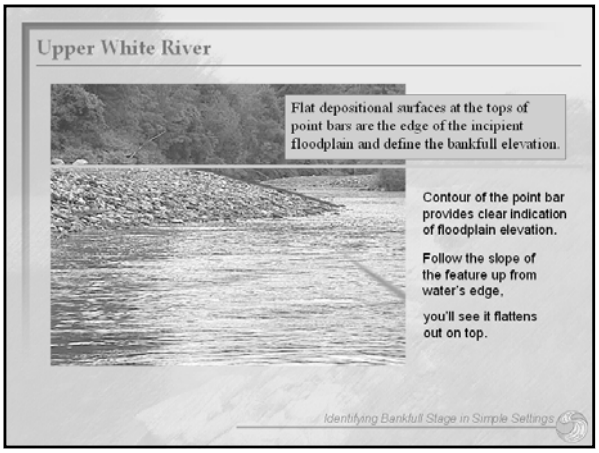


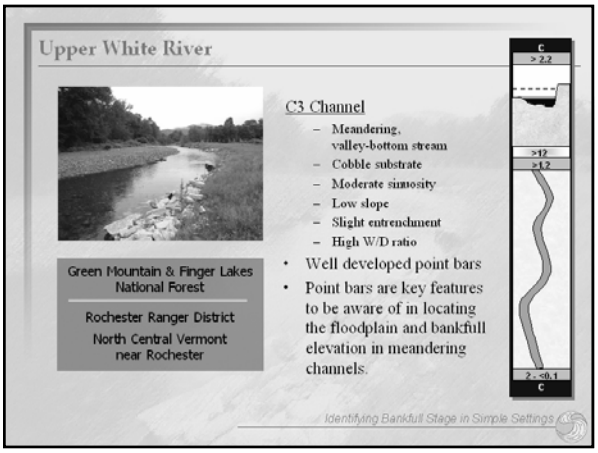
View of the upstream face of the bridge.





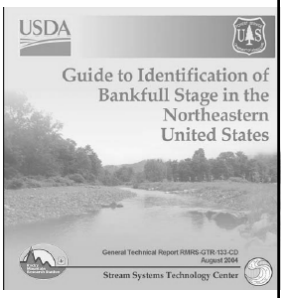
http://www.fws.gov/midwest/Fisheries/StreamCrossings/images/Pg9_CrossSection.gif





Identify Bankfull Stage

- Four disk CD-ROM set available at no cost from STREAM by e-mailing your name and mailing address in label format to rmrs_stream@fs.fed.us



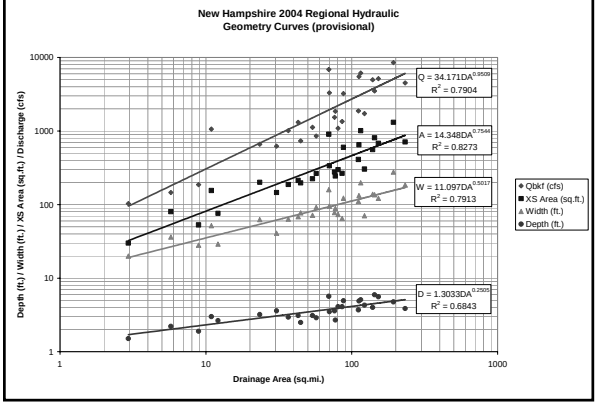
Recommended Standards

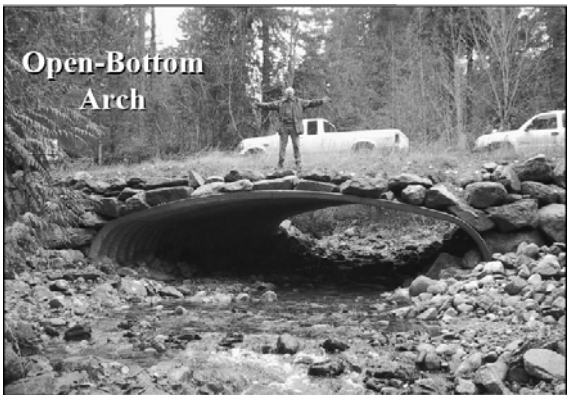
- Bridge span preferred
- Embed smooth culverts at least 2 feet.
- Embed round corrugated culverts the greater of at least 1 foot deep or 25%
- Create natural bottom substrate within culvert (match upstream and downstream substrates).
- Spans channel 1.2 x bankfull width
- Designed to provide water depths and velocities at a variety of flows that are comparable to those found in upstream and downstream segments of natural stream.
- Openness ratio $\geq$ 0.25 (calculated in meters) for perennial streams.

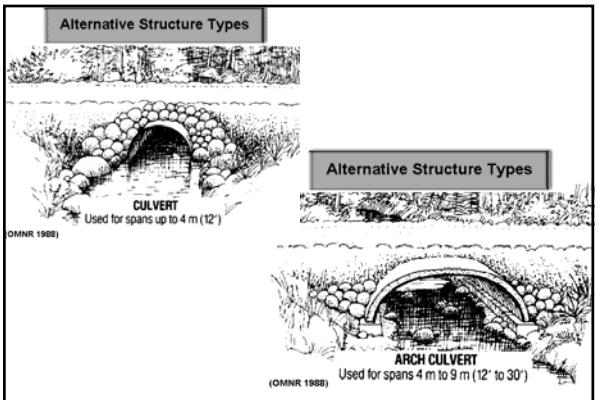
From Scott Jackson. River & Stream Continuity and MA Crossings Standards

Longitudinal profiles

- Establish natural channel gradients
- Locate grade controls
- "Installed " gradients controls and culvert effects
  - Culverts low water fords, instream habitat enhancement or grade control structure
  - Length of impacts
- Provide design data and statistics
  - Bedform frequency and dimensions
  - Scour depths
- Provides another data point for overall site interpretation.
- At least 20 bankfull widths upstream and 20 bankfull widths downstream.



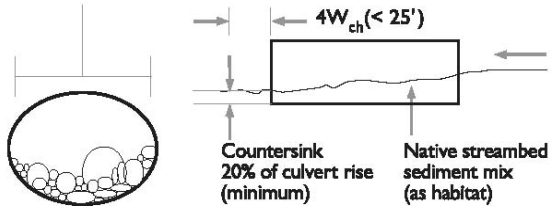




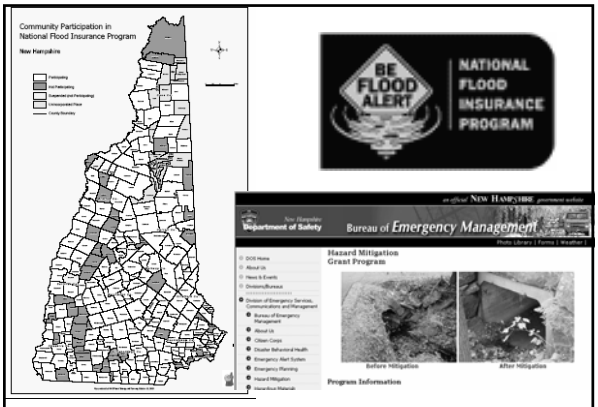
http://www.fws.gov/midwest/Fisheries/StreamCrossings/images/Pg12_Crossings_Arch.gif

Active Channel Design Method

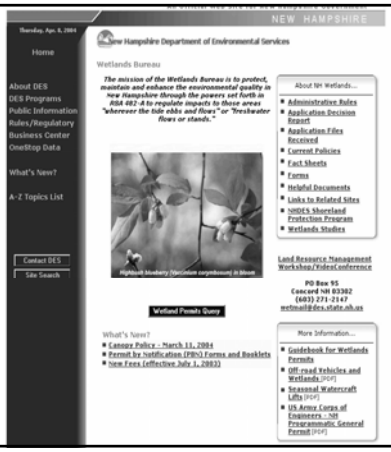
Culvert width, slope and roughness determined by parameters based on fish and hydrology



From Washington State. Design of Road Crossings for Fish Passage



October 13, 2005



Stream Systems Technology Center
http://stream.fs.fed.us/index.html
http://stream.fs.fed.us/fishxing/index.html

Water-Road Interaction Technology Center
http://www.stream.fs.fed.us/water-road/index.html

Maine: http://mainegov-images.informe.org/mdot/environmental-office-homepage/pdf/policyanddesignguide2004.pdf

Massachusetts:
http://www.mass.gov/dfwele/river/programs/rivercontinuity/guidancedoc.htm

Washington State http://wdfw.wa.gov/hab/ahg/

Stream Continuum
http://media.humboldt.edu/~continuum/fishdrafts.php

Summary

- Aquatic organism passage is in current standards (NHPGP and DES rules in general).
- More specific changes and NH-specific guidance and requirements will occur in 2007.
- We are moving in that direction.